

### **C. Remarks**

In the office action, claims 17, 98-103, 125, 126, and 128 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Claims 17, 98-103, 125, 126, and 128 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which applicant regards as the invention. Claims 17, 98-101, 103, 125, 126, and 128 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Moravvej-Farshi *et al.* ("Novel Self-Aligned Polysilicon-Gate MOSFETS with Polysilicon Source and Drain," Solid State Electronics, Vol. 30, No. 10, 1987, pp. 1053-1062) ("Moravvej-Farshi") in view of Wolf *et al.* ("Silicon Processing for the VLSI Era, Volume 3: The Submicron MOSFET," 1995, pp. 232-240 and 309-311) ("Wolf"). Claim 102 stands rejected under § 103(a) as being unpatentable over Moravvej-Farshi and Wolf in view of U.S. Patent No. 6,130,482 to Iio *et al.* ("Iio"). Applicants respectfully traverse the rejections as follows.

#### Section 112 Rejections

##### First Paragraph

Solely for the purpose of expediting examination of the application and without conceding the correctness of the Examiner's rejections, Applicants have amended independent claims 17, 125, and 128 to remove the limitation wherein the first and second pocket implant junctions are "characterized by a non-uniform dopant profile." Accordingly, Applicants respectfully request withdrawal of the § 112, first paragraph rejection of claims 17, 98-103, 125, 126, and 128.

### Second Paragraph

Solely for the purpose of expediting examination of the application and without conceding the correctness of the Examiner's rejections, Applicants have amended independent claims 17, 125, and 128 to remove the limitation wherein the first and second pocket implant junctions comprise "an excess amount of dopant." Accordingly, Applicants respectfully request withdrawal of the § 112, second paragraph rejection of claims 17, 98-103, 125, 126, and 128.

### Section 103 Rejections

#### Claims 17, 98-103, 125, 126

Applicants have amended claim 17 to recite that the transistor formed on a substrate assembly includes:

- a raised drain structure;
- a raised source structure;
- a gate located between said source and said drain;
- a first capping layer in communication with at least a portion of said gate and said source;
- a first portion of a gate oxide region in communication with at least a portion of said gate and said source;
- a first pocket implant junction located in said substrate assembly, said first pocket implant junction comprising a first high dose dopant implant and defining a first low-resistance path, wherein said first pocket implant junction is in communication with a non-sidewall portion of said source and extends under a first portion of said gate;
- a second capping layer in communication with at least a portion of said gate and said drain;
- a second portion of said gate oxide region in communication with at least a portion of said gate and said drain; and
- a second pocket implant junction located in said substrate assembly, said second pocket implant junction

comprising a second high dose dopant implant and defining a second low-resistance path, wherein said second pocket implant junction is in communication with a non-sidewall portion of said drain and extends under a second portion of said gate.

Applicants submit that support for this amendment may be found throughout the specification and figures as filed, such as, for example, at page 2, lines 12-14, at page 6, line 23 through page 7, line 5, and in Figures 7-11.

Applicants submit that a *prima facie* case of obviousness under 35 U.S.C. §103(a) requires, among other things, that the cited references, when combined, teach or suggest every element of the claim. See MPEP §2142. Applicants submit that the Office has not established a *prima facie* case of obviousness because not all elements of claim 17 are taught or suggested by the cited references.

More specifically, Applicants submit that Moravvej-Farshi, Wolf, and Iio, either alone or in combination, fail to teach or suggest, among other things, a transistor formed on a substrate assembly that includes:

a first pocket implant junction located in said substrate assembly, said first pocket implant junction comprising a first high dose dopant implant and defining a first low-resistance path, wherein said first pocket implant junction is in communication with a non-sidewall portion of said source and extends under a first portion of said gate;  
[and]

a second pocket implant junction located in said substrate assembly, said second pocket implant junction comprising a second high dose dopant implant and defining a second low-resistance path, wherein said second pocket implant junction is in communication with a non-sidewall portion of said drain and extends under a second portion of said gate,

as recited in claim 17.

Applicants submit that Moravvej-Farshi discloses a technique for self-aligning a polysilicon gate in devices having polysilicon source and drain regions. See, e.g., Abstract. As conceded by the Examiner at pages 2-3 of the office action, neither this technique nor device structures fabricated thereby teach or suggest “a first pocket implant junction” and “a second pocket implant junction,” as recited in claim 17.

Applicants submit that Wolf discloses, beginning at page 35, several techniques for preventing subsurface punchthrough in short-channel MOSFETs. For NMOSFETs, Wolf discloses that one such technique includes implanting p-type dopants under the lightly-doped tip region of the lightly-doped drain (LDD). See page 238, page 240, Figure 5-25(a). Wolf discloses that this dopant implant, termed a “halo implant,” “raises the doping concentration only on the inside walls of the source/drain junctions,” thus permitting the channel length to be decreased without the use of a higher-dosed substrate. See page 238 (emphasis added).

Importantly, Wolf fails to disclose the use of such implants in devices having raised source and drain structures (such as those claimed in the present invention) in which the sidewalls of the source and drain are elevated above the substrate. Accordingly, as seen in Figures 7-11 of the present application, the first and second pocket implant junctions 36 located in the substrate 12 are not in communication with the sidewalls of the source drain structures 28, 30 and thus do not raise dopant concentrations at those areas. Rather, the first and second pocket implant junctions 36 are “in communication with a **non-sidewall** portion” of the raised source and drain structures 28, 30, respectively. Thus, even if Moravvej-Farshi teaches raised source and drain features as the Examiner contends, Applicants submit that the combination of these features with that taught by Wolf (i.e., a halo implant for raising dopant

concentration only on the inside walls of the source/drain junctions) still fails to teach or suggest each and every element of claim 17.

For at least the above reasons, Applicants submit that claim 17, as well as claims 98-103 depending therefrom, are nonobvious over the cited references, either alone or in combination. See MPEP §2143.03 (stating that if an independent claim is nonobvious under §103(a), then any claim depending therefrom is nonobvious). Accordingly, Applicants respectfully request that the §103 (a) rejections of claims 17 and 98-103 be withdrawn.

#### Claims 125-126

Claim 125 is directed to a transistor formed on a substrate assembly and has been amended in a manner similar to claim 17. Therefore, for reasons analogous to those presented above with respect to claim 17, Applicants submit that claim 125, as well as claim 126 depending therefrom, are nonobvious over the cited references. Applicants therefore respectfully request that the § 103(a) rejection of claims 125-126 be withdrawn.

#### Claim 128

Claim 128 is directed to a transistor formed on a substrate assembly and has been amended to include:

a halo implant structure located in said substrate assembly, said structure comprising a first pocket implant junction and a second pocket implant junction, wherein said first pocket implant junction includes a first high dose dopant implant in communication with a non-sidewall portion of said source and extends under a first edge of said gate, and wherein said second pocket implant junction includes a second high dose dopant implant in communication with a

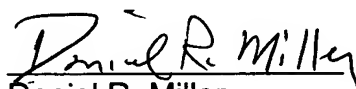
non-sidewall portion of said drain and extends under a second edge of said gate.

Applicants submit that support for this amendment may be found throughout the specification and figures as filed, such as, for example, at page 2, lines 12-14, at page 6, line 23 through page 7, line 5, and in Figures 7-11. For reasons analogous to those presented above with respect to claim 17, Applicants submit that claim 128 is nonobvious over the cited references. Applicants therefore respectfully request that the § 103(a) rejection of claim 128 be withdrawn.

#### **D. Conclusion**

Applicants respectfully request issuance of a Notice of Allowance for the subject application. If the Examiner is of the opinion that the subject application is in condition for disposition other than allowance, the Examiner is respectfully requested to contact the undersigned representative at the telephone number listed below, in order that the Examiner's concerns may be expeditiously addressed.

Respectfully submitted,

  
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